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Spring 2-1-2018

PHSX 206N.05: College Physics I Laboratory

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Recommended Citation
Halfpap, Braford L., "PHSX 206N.05: College Physics I Laboratory" (2018). *Syllabi*. 7876.
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1 Syllabus for Physics 206 - Laboratory

1.1	Term -	Spring 2018
1.2	Instructor	Brad Halfpap
1.3	Office	CHCB 232
1.4	email -	bradford.halfpap@umontana.edu
1.5	Office hours	Monday – Thursday 8:00 to 8:50
1.6	Textbook	None

2 Description of the course

2.1 You should become familiar with the Moodle site for this class as you will find the laboratory handouts there for each week. You are expected to bring a copy of the handout for each week and your lab notebook with you to each lab meeting. There are additional materials posted there as well. Quizzes will be given through the Moodle interface.

2.2 I have four learning goals for the laboratory course.

2.2.1 - *I want you to learn to make careful and correct measurements in the laboratory.* This means that you are to measure the indicated quantities with the appropriate instruments - *using them well*. If you do this you will get very nearly the measurement I did when I used the same equipment to investigate the same questions. I will assess this with one or more questions on lab quizzes asking for your measurement result. You will give your measurement with an associated uncertainty. Your score will reflect how well you used your measurement tools and whether you present your results appropriately.

2.2.2 - *I want you to learn to perform appropriate analyses of your data.* I will explain how you might do this for each week's laboratory exercise. As examples, you might do a statistical analysis or perhaps a graphical analysis. I will assess this by asking for intermediate or final results on your lab quiz. Your score will reflect how well you did your computations.

2.2.3 - *I want you to be able to understand and use simplified error analysis techniques.* You should be adept at this from your work in Physics 206. I will ask you for your uncertainties in intermediate or final computations on your lab quizzes. Correct use of our analysis scheme will get you full credit. We will make extensive use of spreadsheets. You need to have a reasonable facility with EXCEL.

2.2.4 - *I will want you to understand the physical implications of some of the major concepts featured in the laboratory exercises.* We will

discuss some of these during the introduction to the labs but I will expect you to be able to think and apply your knowledge on the spot. Most weeks there will be a question to assess this on your lab quiz.

2.2.5 - Every person needs to understand everything that was done during the data collection and data analysis parts of the laboratory. I will ask questions about these things on the quizzes and you will be on your own at that point. Observe and ask questions of your lab group members. Write notes to yourself about what was done and why.

3 Course Grades

3.1 There are 11 laboratory exercises; for each there will be a pre-lab quiz and a post-lab quiz. <u>There will be no opportunities for make up labs.</u> All of the quizzes are taken on our Moodle site. *All of the quizzes are individual efforts. You should use your laboratory notebook and the laboratory handouts but you may not consult with anyone during your quiz. In addition, you are not to tell anyone who has not yet taken the quiz anything about it.*

3.2 Pre-Lab Quizzes

3.2.1 - You will have until **11:00pm on Sunday** prior to the lab to have completed the Pre-Lab Quiz. There will be 11 such quizzes and your grade will, in part, be based upon your best 10 scores. Each Pre-Lab Quiz will require you to do computations similar to the questions asked in the laboratory handout.

3.2.2 Work through the handout before starting the quiz.

3.2.3 - Keep at least 4 digits during your computations. Give answers on pre-lab quizzes to 3 significant digits.

3.2.4 - Read the questions carefully and answer the question that was asked. People make up their own questions all the time. They never get credit for doing that.

3.2.5 - All questions will either be multiple choice or require a numerical value as an answer.

3.2.6 Units will be a required part of most answers. 100% of the time you will be required to use standard SI units (m, kg, s, J, N, etc.). If you use non-standard units (g, cm, mm, km, etc.) you will lose that part of the credit. Use the standard units throughout the entire semester.

3.2.7 - You will have 60 minutes to complete the quiz but it is designed to be completed in 10 minutes by a well prepared student.

3.3 Post-Lab Quizzes

3.3.1 - You will have until **11:00pm on Thursday** of the week following the lab to have completed the Post-Lab Quiz. There will be 11 such quizzes and your grade will, in part, be based upon your best 10 scores.

3.3.2 - Each quiz will follow the same format. There will be at least one (possibly multi-part) question to assess each of the four learning goals listed above.

3.3.3 - For measurement questions credit will be given based upon how well you made your measurement. Pay attention to the units requested; being off by a factor of 10 or 1000 will surely result in zero points for that question.

3.3.4 - For questions regarding uncertainties it will be possible for you to give values that are too large or too small. Pay careful attention to what you are actually doing during the laboratory period and make notes in your book.

3.3.5 - There will be a range of acceptable values for computed results. The range is not without limit though. Typically you will need to be within about 20% to receive full marks; this can change, however, for particular laboratories.

3.3.6 - If you have done your analysis in a thoughtful fashion you should be well prepared to answer the application problem. It is usually inspired by the calculations that you were to have done.

3.3.7 - Each quiz will be designed to be finished in not more than 15 minutes by a well prepared student. You will have 60 minutes from the time you start to complete the quiz.

3.4 The Pre-Lab Quizzes will count for 20% of the semester grade. The Post-Lab Quizzes will constitute the remaining 80%. The distribution of grades will, by departmental policy, be about 25% A, 25% B, 25% C, and 25% D & F. All students who complete the first two weeks will be counted in this total and thus some of the D and F grades will be associated with students who have withdrawn from the course.

4 For a detailed schedule of the course, see our Moodle site.

5 Standard Syllabus Material

6 The standard university catalog not withstanding, this course may only be taken for traditional credit or audited. The latter option is only available at the beginning of the semester. If the class goes poorly your only grading options will be to withdraw or stay with the course and receive a letter grade.

7 Students are expected, when selecting and registering for their courses, to make informed choices and to regard those choices as semester long commitments and obligations. After registering and through the **first fifteen (15) instructional days of the semester**, students may use the internet (http://cyberbear.umt.edu) to drop and add courses or change sections and credits. Fees are reassessed on the fifteenth day of the term. Added courses and credits may result in additional fees. For courses dropped by the fifteenth instructional day, no fees are charged and courses are not recorded. (For deadlines and refund policy for withdrawal from all courses, see the Withdrawal sections of this catalog.) An instructor may specify that drop/add is not allowed on the internet. A drop/add form is used to make changes in these courses, if approved by the instructor. After adding a course, the credit/no credit grading option or auditor status may be elected on the internet or on a form available at the Registration Counter in Griz Central in the Lommasson Center. These options are not allowed for some courses as identified in the Class Schedule. Change of grading option to audit is not allowed after the 15th instructional day. Beginning the **sixteenth (16) instructional day of the semester through the thirtieth (30) instructional day**, students use paper forms to drop, add, and make changes of section, grading option, or credit. The drop/add form must be signed by the instructor of the course and the student's advisor. The signed drop/add form must be returned to the Registration Counter (or the Registrar's Office at the College of Technology) no later than the thirtieth instructional day. A $10.00 processing fee is charged for each drop/add form. Added courses and credits may result in additional fees. There are no refunds or reductions of fees for courses dropped and grades of W (withdrew) are recorded. Beginning the thirty first (31) instructional day of the semester through the last day of instruction before scheduled final examinations, students must petition to drop, add, and make changes of section, grading option, or credit. The petition form must be signed by the instructor of the course and the student's advisor and, in the case of drops only, by the dean of the student's major. A $10.00 processing fee is charged for each petition. Added courses and credits may result in additional fees. There are no refunds or reductions of fees for courses dropped, and the instructor assigns a grade of WP (withdrew/passing) if the student's course work has been passing or a WF (withdrew/failing) if the course work has been failing. These grades do not affect grade averages but they are recorded on students' transcripts. Documented justification is required for dropping courses by petition. Some examples of documented circumstances that may merit approval

are: registration errors, accident or illness, emergency, change in work schedule, no assessment of performance in class until after this deadline, or other circumstances beyond the student's control. The opportunity to drop a course for the current term or alter grading option for such a course ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended) or new students unfamiliar with the drop process who have ceased attendance before the sixteenth day of instruction and can provide to the Registrar's Office instructor verification of non-attendance.

1.1.1 Class Attendance/Absence Policy

8 Students who are registered for a course but do not attend the first two class meetings may be required by the instructor to drop the course. This rule allows for early identification of class vacancies to permit other students to add classes. **Students not allowed to remain must complete a drop form or drop the course on the internet (http://cyberbear.umt.edu) to avoid receiving a failing grade**. Students who know they will be absent should contact the instructor in advance. Students are expected to attend all class meetings and complete all assignments for courses in which they are enrolled. Instructors may excuse brief and occasional absences for reasons of illness, injury, emergency, or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Instructors shall excuse absences for reasons of military service or mandatory public service. Instructors may establish absence policies to conform to the educational goals and requirements of their courses. Such policies will ordinarily be set out in the course syllabus. Customarily, course syllabi will describe the procedures for giving timely notice of absences, explain how work missed because of an excused absence may be made up, and stipulate any penalty to be assessed for absences.

9 - Academic Honesty

10 All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the university.

11 All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umt.edu/SA/VPSA/index.cfm/page/1321.